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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/807,560	04/12/2001	David N. Rudo	RUDO117125	9141

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EXAMINER

YEH, JAMES T

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 06/19/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/807,560

Applicant(s)

RUDO, DAVID N.

Examiner

James T Yeh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

2. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

3. The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,176,951 to Rudo in view of U.S. 4,610,688 to Silvestrini et al and U.S. 5,921,778 to Karmaker.

Rudo discloses a method and composition to reinforce a dental appliance or prosthesis. He discloses that synthetic resin containing dental structures can

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be reinforced by combining a lightweight woven fabric comprising aramid or polyethylene fibers (col.4 line 1). The method of his invention involves applying one or more layers of a lightweight woven fabric to a dental structure to be reinforced, and typically covering the fabric with resin so that the fabric is not exposed (col.4 lines 20-25). Fibers used to construct the fabric include Kevlar[®] and Spectra[®] (col.2 line 40). The fibers surface can be treated with plasma to enhance the bonding between the fiber and resin (col.1 line 40). Furthermore, in claim 2 of Rudo's invention a clod gas plasma treatment is used to treat the fiber surface. The polymeric resin used can be acrylic resin and bis-GMA (col.6 line 52). Rudo also discloses the type of dental structures that can be reinforced: retainer, bridges, splints, etc (col.7 lines 5-28). Fabric reinforcement is also stronger when the threads of different layers of fabric do not run parallel with respect to each other (col.6 line 1). For example, neighboring layers can be set such that some of the threads from neighboring layers will form 45 deg angle relative to each other (col.6 line 5).

The difference between the present claims and Rudo's invention is the reinforcement material to be tri-axial material.

Silvestrini discloses a tri-axially braided fabric element used in medical application to have an improved strength (col.2 lines 25-35). Karmaker discloses the use of hybrid woven material for reinforcement of dental restorations (Abstract).

In light of the advantages of using a tri-axially braided fabric element to improve medical article's strength, as taught by Silvestrini, and the use of hybrid woven material for reinforcement of dental restorations, as taught by Karmaker, it would have therefore been obvious to one of ordinary skill in the art to utilize the such tri-axially braided fabric material in dental reinforcement application in Rudo's disclosure and thereby arrive at the claimed invention.

5. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. 5,176,951 to Rudo in view of U.S. 5,962,550 to Akahane et al.

The discussion with regard to Rudo's invention of a reinforced dental structure is incorporated here by reference.

The difference between the present claim and Rudo's invention is the refractive index of the tri-axial material to be similar to the resin used.

Akahane discusses the importance of the similar refractive index among material used in dental composition (col.4 line 52).

In light of the advantage of using a similar refractive index material throughout the dental composition, as taught by Akahane, it would have therefore been obvious to one of ordinary skill in the art to use the tri-axial material with similar refractive index to the resin in Rudo's disclosure and thereby arrive at the claimed invention.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to the present application in general:

U.S. Pat. No. 6,179,872 to Bell et al – braided biopolymer matt for
medical/dental reinforcement
application

U.S. Pat. No. 4,567,738 to Hutson et al – structural fabric of multi-axial
yarn and method of making the yarn

U.S. Pat. No. 6,220,862 to Casellini et al – stratified materials used in
dental prostheses

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Yeh whose telephone number is (703) 305-3139. The examiner can normally be reached on Monday – Friday from 8:00 am to 5:30 pm with the exception of the first Friday per bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner 's supervisor, Vasu Jagannathan, can be reached at (703) 306-2777.

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James T. Yeh, Ph.D.
June 12, 2002

EDWARD J. CAIN
PRIMARY EXAMINER
GROUP 1500

